

1 WHAT IS CLAIMED IS:

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1. A mobile communication system
comprising:

a plurality of radio base stations
forming respective radio zones and effecting a radio
10 channel setting control in accordance with a
predetermined procedure; and

a mobile station selecting, as a wait
zone, one of the radio zones that satisfies a criteria
demanded by the predetermined procedure, and receiving
15 communication service via the selected wait zone,

each of the radio base stations
comprising:

traffic control means for setting a
traffic distribution for the plurality of radio zones;
20 and

announcing means for generating
announcement information including the order of
priority assigned to the plurality of radio zones, the
order of priority being assigned in accordance with a
25 probability density given to each of the plurality of
radio zones under the distribution set by the traffic
control means, and for transmitting announcement
information to the radio zone formed by the radio
station to which the announcing means belongs,

30 the mobile station comprising:

announcement information receiving
means for receiving the announcement information
transmitted by the announcing means in accordance with
the predetermined procedure; and

35 wait control means for selecting one of
the radio zones as a wait zone, the radio zone to
which a highest priority is assigned being a first

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1 candidate for selection by the wait control means.

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2. A mobile communication system
comprising:

a plurality of radio base stations
forming one or a plurality of radio zones and one or a
10 plurality of small-scale radio zones, resulting in a
hierarchy of overlapping radio zones, and effecting a
radio channel setting control in accordance with a
predetermined procedure; and

a mobile station accessing one of the
15 radio zones formed by the respective one of the
plurality of radio base stations, in accordance with a
predetermined procedure, and receiving communication
service via the accessed radio zone,

each of the plurality of radio base
20 stations comprising:

announcing means for transmitting
announcement information which includes identification
information for identifying radio channels assigned to
respective radio zones and small-scale radio zones,
25 via the radio channel assigned to the radio zone
formed by the radio base station to which the
announcing means belongs, the identification
information being arranged in the announcement
information so as to correspond to the hierarchy of
30 overlapping radio zones,

the mobile station comprising:

announcement information receiving
means for receiving the announcement information
transmitted by the announcing means, in accordance
35 with the procedure for radio channel setting control;

measuring means for measuring an
electric field intensity for the radio channel

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the mobile station comprising:

measuring means for measuring an

wait control means for comparing an

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35 a mobile station accessing one of the
radio zones formed by the respective one of the
plurality of radio base stations, in accordance with a
predetermined procedure, and receiving communication

- 1 service via the accessed radio zone,
each of the plurality of radio base
stations comprising:
announcing means for transmitting
5 announcement information which includes identification
information for identifying radio channels for the one
or the plurality of radio zones and the one or the
plurality of small-scale radio zones, via the radio
channel assigned to the radio zone formed by the radio
10 base station to which the announcing means belongs,
the identification information being arranged in the
announcement information according to respective
positions in the hierarchy of overlapping zones,
the mobile station comprising:
15 announcement information receiving
means for receiving the announcement information
transmitted by the announcing means, in accordance
with the procedure for radio channel setting control;
measuring means for measuring an
20 electric field intensity for the radio channel
corresponding to the identification information
included in the announcement information received by
the announcement information receiving means; and
wait control means for comparing an
25 electric field intensity measured by the measuring
means with a preset threshold level, and designating
one of the radio channels, which is assigned to the
radio zone lowest in the hierarchy and for which the
control means has determined that the electric field
30 intensity measured by the measuring means exceeds the
preset threshold level, as a radio channel via which
to receive the communication service.

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11 ~~8~~. A mobile communication system

1 comprising:

a plurality of radio base stations forming one or a plurality of radio zones and one or a plurality of small-scale radio zones, resulting in a hierarchy of overlapping zones, and effecting a radio channel setting control in accordance with a predetermined procedure; and

a mobile station accessing one of the radio zones formed by the respective one of the plurality of radio base stations, in accordance with a predetermined procedure, and receiving communication service via the accessed radio zone,

each of the plurality of radio base stations comprising:

announcing means for transmitting announcement information which includes identification information for identifying the one or the plurality of radio zones and the one or the plurality of small-scale radio zones, via the radio channel assigned to the radio zone formed by the radio base station to which the announcing means belongs, the identification information being arranged in the announcement information according to respective positions in the hierarchy of overlapping zones,

the mobile station comprising:
announcement information receiving means for receiving the announcement information transmitted by the announcing means, in accordance with the procedure for radio channel setting control;

measuring means for measuring an electric field intensity for the radio zone corresponding to the identification information included in the announcement information received by the announcement information receiving means; and

wait control means for comparing an electric field intensity measured by the measuring means with a preset threshold level, and designating,

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1 information being arranged in the announcement
information according to respective positions in the
hierarchy of overlapping zones,
the mobile station comprising:
5 announcement information receiving
means for receiving the announcement information
transmitted by the announcing means, in accordance
with the procedure for radio channel setting control;
measuring means for measuring an
10 electric field intensity for the radio channel
corresponding to the identification information
included in the announcement information received by
the announcement information receiving means; and
wait control means for comparing an
15 electric field intensity measured by the measuring
means with a preset threshold level, determining the
radio channel which is identified by the associated
second identification information, if available, to
have a lowest hierarchical order, and designating, as
20 a wait zone in which to receive the communication
service, the radio zone to which the determined radio
channel is assigned, on the condition that the
electric field intensity measured by the measuring
means exceeds the threshold level.

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137. A mobile communication system
30 comprising:
a plurality of radio base stations
forming one or a plurality of radio zones and one or a
plurality of small-scale radio zones, resulting in a
hierarchy of overlapping zones, and effecting a radio
35 channel setting control in accordance with a
predetermined procedure; and
a mobile station accessing one of the

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1 radio zone as a wait zone in which to receive the
communication service on the condition that the
electric field intensity measured by the measuring
means exceeds the threshold level.

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148. A mobile communication system
10 comprising:

a plurality of radio base stations
forming one or a plurality of radio zones and one or a
plurality of small-scale radio zones, resulting in a
hierarchy of overlapping zones, and effecting a radio
15 channel setting control in accordance with a
predetermined procedure; and

a mobile station accessing one of the
radio zones formed by the respective one of the
plurality of radio base stations, in accordance with a
20 predetermined procedure, and receiving communication
service via the accessed radio zone,

each of the plurality of radio base
stations comprising:

announcing means for transmitting
25 announcement information which includes a hierarchical
(equal or subordinate) order of the radio zone formed
by the radio base station to which the announcing
means belongs with respect to the overlapping radio
zones and small-scale radio zones, and which also
30 includes identification information for identifying
radio channels assigned to the radio zone formed by
the radio base station to which the announcing means
belongs and the overlapping radio zones and small-
scale radio zones, via the radio channel assigned to
35 the radio zone formed by the radio base station to
which the announcing means belongs,

the mobile station comprising:

- 1 announcement information receiving
means for receiving the announcement information
transmitted by the announcing means, in accordance
with the procedure for radio channel setting control,
5 for extracting the identification information from the
announcement information, and for determining the
hierarchy of the radio zones to which the radio
channels identified by the identification information
are assigned;
- 10 measuring means for measuring an
electric field intensity for the radio channel
corresponding to the identification information
obtained by the announcement information receiving
means; and
- 15 wait control means for comparing an
electric field intensity measured by the measuring
means with a preset threshold level, and designating a
radio zone to which the radio channel lowest in the
hierarchy is assigned as a wait zone in which to
20 receive the communication service, on the condition
that the electric field intensity measured by the
measuring means for the radio channel lowest in the
hierarchy exceeds the preset threshold level.

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158. A mobile communication system
comprising:

- 30 a plurality of radio base stations
forming one or a plurality of radio zones and one or a
plurality of small-scale radio zones, resulting in a
hierarchy of overlapping zones, and effecting a radio
channel setting control in accordance with a
35 predetermined procedure; and
a mobile station accessing one of the
radio zones formed by the respective one of the

- 1 plurality of radio base stations, in accordance with a
predetermined procedure, and receiving communication
service via the accessed radio zone, each of the
plurality of radio base stations comprising:
- 5 announcing means for transmitting
announcement information which includes a hierarchical
(equal or subordinate) order of the radio zone formed
by the radio base station to which the announcing
means belongs with respect to the overlapping radio
10 zones and small-scale radio zones, and which also
includes identification information for identifying
the radio zone formed by the radio base station to
which the announcing means belongs and the overlapping
radio zones and small-scale radio zones, over the
15 radio zone formed by the radio base station to which
the announcing means belongs,
the mobile station comprising:
announcement information receiving
means for receiving the announcement information
20 transmitted by the announcing means, in accordance
with the procedure for radio channel setting control,
for extracting the identification information from the
announcement information, and for determining the
hierarchy of the radio zones corresponding to the
25 identification information;
measuring means for measuring an
electric field intensity for the radio zone
corresponding to the identification information
extracted by the announcement information receiving
30 means 14g; and
wait control means for comparing an
electric field intensity measured by the measuring
means with a preset threshold level, and designating a
radio zone lowest in the hierarchy determined by the
35 announcement information receiving means as a wait
zone in which to receive the communication service, on
the condition that the electric field intensity

1 measured by the measuring means for the radio zone
lowest in the hierarchy exceeds the preset threshold
level.

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3 10. The mobile communication system as
claimed in claim 2, wherein said announcing means
10 comprises means for adding, in the announcement
information, preset threshold values individually
provided for the radio zone formed by the radio base
station to which the announcing means belongs and the
overlapping radio zones and small-scale radio zones,
15 resulting in a hierarchy that corresponds to the
hierarchy of overlapping zones, and
said wait control means employs the
threshold values added to the announcement information
by the announcing means in making comparisons with the
20 electric field intensity.

25 4 11. The mobile communication system as
claimed in claim 2 wherein announcing means comprises
means for adding a relative value indicating the
preset threshold value for the zone formed by the
radio base station to which the announcing means
30 belongs, in the form of a difference with respect to a
reference value for the threshold value, and
said announcement information receiving
means includes means for determining the relative
value added to the announcement information, in
35 relation to the radio zone in which the announcement
information is received, and
said wait control means compares the

1 electric field intensity measured by the measuring
means with a sum of the reference value and the
relative value determined by the announcement
information receiving means in relation to the radio
5 zone in which the electric field intensity is
measured.

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512. The mobile communication system as
claimed in claim 2, wherein said announcing means
comprises means for adding relative values indicating
the preset threshold values for the radio zone formed
15 by the radio base station to which the announcing
means belongs and the overlapping radio zones and
small-scale radio zones, in the form of differences
with respect to a reference value common to the
threshold values, resulting in a hierarchy that
20 corresponds to the hierarchy of overlapping zones, and
said wait control means compares the
electric field intensity with a sum of the relative
value and the reference value.

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413. The mobile communication system as
claimed in claim 2, wherein said mobile station
30 comprises zone determination means for performing a
cyclic measurement of the electric field intensity of
the radio zones in which the mobile station can be
located, comparing a measured electric field intensity
with a lower acceptance value by which an entry into
35 the radio zone is enabled, stopping processes of
measurement and comparison when it is found that the
former exceeds the latter, and selecting the

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20 15. The mobile communication system as
claimed in claim ~~13~~¹², wherein said measuring means
comprises means which omits a measurement of the radio
zone selected by the zone determination means and
substitutes therefor the electric field intensity
25 measured by the zone determination means.

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announcement information receiving
5 means for receiving the announcement information
including the order of priority of said plurality of
base stations and transmitted from said plurality of
base stations; and

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storage means for storing the
20 announcement information;

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1 2125. The mobile communication system as
claimed in claim 18, wherein said transmission means
includes third transmission means for transmitting a
request for a communication to the base station
5 selected by the control means when a message channel
is switched from one to another in the event of a
handover of a call.

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26. A mobile station for use in a
mobile communication system, comprising control means
for selecting a base station to which a request for a
message channel is to be issued, based on an order of
priority of a plurality of base stations included in
announcement information from said plurality of base
stations.

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27. The mobile station as claimed in
claim 26, further comprising:
25 announcement information receiving
means for receiving, from said plurality of base
stations, the announcement information including the
order of priority of said plurality of base stations;
and

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transmission means for transmitting a
request for a message channel to the base station
selected by said control means.

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3128. The mobile station as claimed in

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storage means for storing the
announcement information;

measuring means for measuring a
5 reception level in reception-level determining
channels in a descending order of priority of said
plurality of base stations, based on the announcement
information stored in said storage means and including
the order of priority and based on information
10 relating to the reception-level determining channels.

15 ³¹~~32~~²⁹. The mobile station as claimed in
claim ~~28~~³¹, wherein said control means includes
determining means for determining whether the
reception level in a reception-level determining
channel is equal to or exceeds a predetermined level
20 that enables a request for a message channel.

25 20.30. The mobile station as claimed in
claim 27, wherein said transmission means includes
first transmission means for issuing a request for a
message channel to the base station selected by the
control means when a call is originated.

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35 ~~29~~ 31. The mobile station as claimed in
claim 27, wherein said transmission means includes
second transmission means for issuing a request for a
message channel to the base station selected by the

1 control means when a call is incoming.

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3032. The mobile station as claimed in
claim 27, wherein said transmission means includes
third transmission means for transmitting a request
for a communication to the base station selected by
10 the control means when a message channel is switched
from one to another in the event of a handover of a
call.

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33. A base station forming a radio zone
that overlaps radio zones formed by other base
stations in a mobile communication system;

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announcing means for sending
announcement information including an order of
priority of a plurality of base stations constituting
the mobile communication system to a mobile station
located in one of the radio zones.

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34. The base station as claimed in
30 claim 33, wherein said announcing means includes first
arranging means for ordering the announcement
information so as to arrange information relating to
reception-level determining channels in a descending
order of priority.

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